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Occupational Health Effects of Hurricane Sandy in New Jersey

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Background

- Hurricane Sandy made landfall on October 29, 2012.
- By October 31, 7-8 million people were without power, ~20,000 people were in shelters, and coastal homes and businesses were under water.
- The entire state was declared a federal disaster area with over \$70 billion in damage.
- Hurricane Sandy was the largest natural disaster to impact the state.




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Background

- Work-related deaths, injuries, and illness that occur because of natural and man-made disasters are a serious public health concern.
- As a direct result of the effects of Hurricane Sandy:
 - Seven work-related fatalities occurred in NJ, many of whom were working in a **response capacity**.
 - Of the seven, three were tree care workers.





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What health conditions and challenges did the workers who responded to these circumstances face?

How can we improve our response in the future?

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Project Aim 1

- Summarize work-related injuries and acute illnesses in NJ after Hurricane Sandy through retrospective analyses of statewide data sources, including hospital uniform billing (UB), syndromic surveillance data (Epi Center), and other sources.

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Aim 1 – Results (UB Data)

Hospitalization and ED visits for work-related injury immediately, before, and after Hurricane Sandy's arrival on October 29, 2012 compared to previous years, all NJ

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Aim 1 – Results (UB Data)

Hospital visits for work-related unintentional trauma injuries from 2009-2013 before and after Hurricane Sandy, men only, by impact area

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Aim 1 – Implications of Results

- Decrease in work-related injuries immediately following Sandy; may be due to shortages in power, transportation, & workers.
- Significant increases in injuries in the 3rd QT post-Sandy, especially among men in the high impact areas
- Injuries increased in some vulnerable populations (e.g., Black and Hispanic men).
- The mechanisms and timing of injuries suggest associations with known high-risk work: construction-related activities and/or tree removal.
- Existing data sources are limited: using Worker's Compensation as a payer to identify work-relatedness in UB data undercounts occupational injuries; does not cover all injuries and illnesses (e.g., respiratory or mental health); does not have enough detail to identify specific hazards.

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Project Aim 2


- Conduct focus group and survey research to summarize working conditions, health impacts, and other work-related challenges among 1) Emergency Medical Service (EMS) responders, 2) Tree care company employers and employees, and 3) organized disaster volunteer workers (e.g., American Red Cross and Salvation Army).
- Among the worker groups:
 - Elucidate similarities and differences between “regular” day-to-day job tasks versus “emergency” job tasks related to Superstorm Sandy
 - Understand possible exposures to contaminants
 - Describe the use of PPEs and other safety equipment
 - Characterize physical and mental health outcomes
 - Ask for recommendations for improvement or prevention
- Based on results of focus groups and surveys, recommend improvements in response and training.

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Aim 2 – List of Partners

- American Red Cross
- Committee for Advancement of Arboriculture
- International Society of Arboriculture
- New Labor Worker Center
- NJ Board of Tree Experts
- NJ Department of Health, Office of Emergency Services
- NJ Department of Labor and Workforce Development
- NJ Voluntary Organization Active in Disaster (NJVOAD)
- The Salvation Army



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Aim 2 – Methods

- Advisory Committee of Subject Matter Experts (ACSME)
 - Identified and engaged representatives of three worker groups, NJDOH, Rutgers University School of Public Health, and others
 - Representatives provided expertise and assistance on methods, implementation, and interpreting results
- Focus groups
 - Moderator’s guide vetted to ACSME
 - Participants recruited through emailed flyers to pertinent worker group listservs, word of mouth, partner organizations, and project team attendance at industry meetings
 - Completed 3 EMS groups (n=27 workers), 3 tree care industry groups (n=32 workers and employers), and 1 organized disaster volunteer group (n=3)
 - Data were digitally recorded, translated, transcribed verbatim, and analyzed for themes via content analysis

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Aim 2 – Methods


- Surveys
 - Instruments include sections on overall work conditions, use of PPE, and work experiences; Sandy-related work conditions, use of PPE, and experiences; general health and knowledge; and demographics
 - Participants recruited through email and flyers to pertinent worker group listservs
 - Instruments administered via e-mail and internet
 - Three instruments currently deployed
- This project was approved by the Rutgers University and NJDOH Institutional Review Boards

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Aim 2 – Focus Group Results (EMS Responders)


- Exposed to unusual conditions, such as floodwater, contaminated sand, downed power lines, animals, feces, mold, and hostile residents
- Conditions depended on geographic location
- PPE was not always used; “We knew there was mold, but it was hot. We didn’t wear our masks.”
- Kept working through exhaustion and debilitating conditions; “...it’s what we do.”
- Strong emotional connection to their work



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Aim 2 – Focus Group Results (Tree Workers)

- Worked 16+ hour days following the storm
- Lighting, fuel, cash, and food were difficult to find
- Downed trees due to this storm presented especially dangerous working conditions
- Larger and more expert companies had more training and use of protective equipment than smaller companies
- Spanish-speaking laborers reported little formal training and minimal use of PPE



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Aim 1 – Summary of Focus Groups

- These two groups of responders:
 - Are generally ready to “face the unexpected,” but “nothing compares” to the scope of job tasks after Sandy
 - “...we had to check [for residents who did not evacuate] so now we are putting all of us at risk to... get washed away” (EMS respondent)
 - “After two days of driving around a tree that was not on our job ticket..., we said let’s just get this tree out of the road and we [cut it down anyway].” (Tree worker respondent)
 - Reported few injuries and no deaths among their colleagues but did report hazardous, high risk environments
 - Discussed the importance of assessing job sites and reviewing safety protocols

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Overall Conclusions

- Based on timing and types of injuries in the UB data, the greatest impact may have been associated with rebuilding and recovery rather than initial response primarily in the high impact regions.
- Existing data sources are limited:
 - Do not cover all injuries
 - May underestimate work-related injuries
 - Do not include other conditions (e.g., respiratory or mental health)
 - Do not have enough detail to direct and plan prevention efforts
- Conducting disaster- and worker group-specific focus groups and surveys is a good strategy to uncover health and work-related challenges that are missed in major datasets.

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Overall Conclusions

- Reaching and enrolling at-risk workers, such as Spanish-speaking day laborers, is challenging.
 - Building upon the existing relationship between NJDOH and the tree industry was critical
 - Collaborating with Worker Centers was helpful to recruit participants.
- EMS responders and tree care company workers and employers were aware they were exposing themselves to work-related hazards and took some precautions to stay safe; however, they looked beyond these risks when completing their job tasks, especially to help the community.

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Overall Conclusions

- Combining quantitative and qualitative methods helped to consider all aspects of occupational health challenges.
- Responses to natural disasters could be safer with additional planning, effective communication, safety, and the use of PPE; this could reduce occupational risks among these two worker populations in the future.
- Improved surveillance will require additional detail on health conditions and hazards.

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Follow-up Study



- Awarded by the Assistant Secretary for Preparedness and Response (ASPR)
- Collaboration between Rutgers School of Public Health in partnership with the New Jersey Department of Health and other key stakeholders
- This two-year project, will develop plans and recommendations for tracking and preventing tree-related injuries among workers, volunteers, and residents.
- Project components:
 - Industry-wide stakeholder working group
 - Analysis of available NJ data
 - Assessment of quality and availability of training via key informant interviews and focus groups

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Work-related injury and illness:

FOCUS ON PREVENTION

Please contact Margaret Lumia at margaret.lumia@doh.state.nj.us or Elizabeth Marshall at marshaeli@sph.rutgers.edu with any questions or comments.

Thank you!

Questions, comments, or feedback?

